Amphetamines Barbiturates & Tranquilizers

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AMPHETAMINES

A group of artificial elements, amphetamines were first synthesized in 1887. They are stimulants which are related both chemically and pharmacologically to natural body hormones such as adrenalin (epinephrine). Like adrenalin, amphetamines stimulate the central and sympathetic nervous systems, however they prolong stimulation far beyond that of natural body hormones.

Amphetamines have been used medically in the treatment of obesity, narcolepsy, mild depression, fatigue and hyperactivity in children. They have also been used orally and intravenously for non-medical reasons. In many cases amphetamines were found to be totally or at least partially ineffective for the conditions for which they were prescribed. Paradoxically, as medical uses were decreased, legal production of amphetamines was increased. In Canada, from 1966 to 1972, nearly twice as many amphetamines were manufactured for domestic medical use as were legally sold.

Non-medical use of amphetamines, however, has grown in popularity and can be found in all age groups and social circles. The LeDain Commission Final Report estimated that approximately 353,000 Canadians (4% of Canadian adults and 7% of the high school population) used amphetamines or amphetamine-like drugs non-medically in 1972. The majority of this use was of the occasional or experimental variety.

The most widely known of the amphetamine group include: amphetamine sulphate (Benzedrine), dextroamphetamine sulphate (Dexedrine or Bi-phetamine), and methamphetamine hydrochloride (Methedrine or Desoxyn). However, at least 37 legally manufactured varieties are available for use in addition to those manufactured illegally in black market operations. Street names for amphetamines include "uppers", "pep-pills", "bennies", "dexies", and "hearts". Methamphetamine is also known as "speed" or "crystal".

When prescribed for use, amphetamines are usually taken orally in tablet or capsule form, or in an elixir. On occasion, intramuscular or intravenous injections may be employed. Non-medical users generally employ the aforementioned method or may "sniff" powdered amphetamine.

A common practice is to lace injectable solutions with impurities such as ether to intensify amphetamine effects. The mixing

of amphetamines with opiates (a speedball), barbiturates, alcohol or LSD also occurs.

Physical Effects of Amphetamines

When taken in low dosages, amphetamines act on the central nervous system to produce arousal, wakefulness, talkativeness, heightened sociability and increased sense of abundant energy and self-confidence. Stimulation of the sympathetic nervous system results in increased blood pressure, pulse rate, breathing rate and blood sugar, as well as slight dilation or constriction of blood vessels and widening of the pupils. Recent research indicates that the increase in blood sugar may be responsible for much of the violent behaviour associated with amphetamine useage. A side effect of the drug is suppression of appetite, which accounts for its past popularity as a treatment for obesity.

The intravenous injection of high doses introduces a fast "rush" or "flash" sometimes described as a total body orgasm. Users mention an orgiastic sensation of tremendous elation. After the first few minutes this rush diminishes and is replaced by a feeling of well-being characteristic of oral use. Activity is purposeful and the user may experience strong emotions of warmth, anger or fear, a compulsion to talk and a sense of cleverness or crystal-clear thinking. These effects may last for several hours. Some users also report increased and more pleasurable sexual activity.

Even at normally prescribed dosages, adverse side effects may occur in some individuals. Complaints can include nervousness, insomnia, tremor, impotence, headache, irritability, blurred vision, very dry mouth, nausea and vomiting, diarrhea, constipation and difficulty in urinating.

Hazards of Amphetamine Use

The chronic user of high doses of amphetamine usually suffers a number of toxic effects such as weight loss, irritability, hyperactivity, acute anxiety, suspicion and the experience of visual and auditory hallucinations.

One of the severest possible results of chronic amphetamine intoxication is amphetamine psychosis, a mental disorder which usually develops with prolonged use of the drug. In 1971, in

Canada, amphetamines were mentioned as a primary or secondary factor in the diagnostic records of 68 of 22,885 patients in residence in psychiatric hospitals.

It is often extremely difficult to differentiate amphetamine psychosis from paranoid schizophrenia, both of which are characterized by delusions, compulsive behaviour, the notion that snakes or insects are crawling on or under the skin and the inability to clearly recall incidents during the psychotic period. The amphetamine psychosis may differ only in that the user generally knows that the feelings of persecution are drug induced. The true amphetamine psychosis disappears when drug use is discontinued although some confusion, memory loss or delusions may persist for 6 to 12 months. The psychosis is seldom experienced during the first experiments with amphetamine use.

Another hazard of chronic abuse is overdose. It may be caused by differences in the strength of illicit amphetamines, repeated injections, or loss of tolerance after a period of abstinence. In 1971, 405 cases of amphetamine poisoning were reported in Canada. The Le Dain Commission Final Report noted that, "Slightly more than half of the individuals were 10 to 24 years of age, and approximately one quarter of the cases involved children under five".

Clinical signs of overdose noted in users have included the following: dizziness, increased reflexes, tremor, insomnia, tenseness, irritability, restlessness, confusion, assaultiveness (physical attack), hallucinations and panic states.

Other effects noted include fatigue, depression, chills, pallor or flushing, sweating, palpitations, high or low blood pressure, headache, anginal pain, circulatory collapse, nausea and vomiting, diarrhea and abdominal cramps. Severe poisoning has resulted in convulsions and coma. Not all of these symptoms necessarily occur during any one incident of overdose.

Death from actual overdose is very rare in the tolerant individual. For example, during the years 1969 to 1971, ten deaths related to amphetamine use were reported in three Canadian provinces. Of these, only two were attributed directly to amphetamine poisoning or overdose. Deaths which do occur are usually attributed to hepatitis, accidents during paranoid delusions, homicidal rages or injection of contaminated materials.

The following points are secondary hazards and/or complications that may result from amphetamine use.

- the high dose user of amphetamines may be harmed by altered sleep patterns, malnutrition and infection. These may lead to: chronic skin rash, non-healing ulcers, abscesses, and chronic chest infections.
- vitamin deficiency diseases such as scurvy can occur. In some users, the rapid development of severe dental and gum diseases may be due to malnutrition, lack of oral hygiene and/or the direct effect of amphetamines.
- the sharing of needles can lead to infected veins and spread hepatitis or tetanus.
- evidence exists that liver functions may become impaired even in intravenous users who do not contract hepatitis.
- dissolving and injecting tablets meant for oral use may result in abnormal changes in the lungs due to insoluble impurities in the tablets.
- frequent high dose amphetamine use also tends to create paranoia and conditions conducive to violence. Suspiciousness and hyperactivity may combine to produce unwarranted physical attack.
- there may be some tendency for amphetamine users to use other drugs such as heroin or barbiturates.

Tolerance, Dependence and Withdrawal

Frequent use of amphetamines can quickly lead to the development of tolerance. Development of tolerance means that more of the drug must be taken to achieve the desired effect.

The individual may continue to use the drug specifically for its euphoric effects. However if oral or intravenous use of the drug continues regularly, a depression may result if abstinence occurs. Other abstinence symptoms can include apathy, "the blues" and sleep disturbances. The user may take barbiturates to counteract these symptoms, and later take amphetamines to counteract the after-effects of the barbiturates. Thus a pattern of multiple drug use may become established, which, if allowed to continue, could lead to serious abuse.

Alternately the user may simply inject more of the drug in order to counteract the unpleasant effects of abstinence. As this injection produces instantaneous feelings of pleasure, the user is easily led into repetitive use. Whereas 20-30 mg of injected methamphetamine may effectively produce a rush in a novice user, frequent use produces a tolerance to the drug which

necessitates an increase in dosage to attain the same effect. Use may reach the level of thousands of milligrams per day. Tolerance to some of the toxic effects of the drug also occurs. This pattern of repeated injections, known as a "run", constitutes serious amphetamine abuse.

The run may be limited initially to a very few injections over one or two days. Eventually such a user, known as a "speed freak", may be injecting amphetamines in very high doses many times a day for three to six days. During this time the user rarely eats or sleeps. Not everyone who tries or uses amphetamines follows these patterns of escalation.

The end of a run (cessation of amphetamine use) is called "crashing". Crashing can occur when the user becomes too exhausted to continue, takes a "downer", is arrested, develops a psychosis or simply exhausts the supply of the drug. Crashing is characterized by a period of deep sleep lasting from 24-48 hours during which time awakening may be impossible. Once awake, however, the user may be ravenously hungry and extremely depressed. This depression can sometimes reach suicidal proportions, and to escape it another run of injections may be started. The user may also experience drowsiness, anxiety and cramps.

In many users amphetamines produce some degree of psychological dependence - a state in which taking the drug is so central to one's thoughts, emotions and activities that it is difficult to stop.

The view that amphetamine use does not cause physical dependence has been under reconsideration for some time. There is a growing concensus that symptoms that regularly follow abrupt discontinuation of chronic amphetamine use constitute an abstinence syndrome, thus indicating physical dependence. These symptoms include fatigue, deep and lengthy sleep, disruption of certain brain waves, strong hunger, cardiovascular abnormalities, occasional gastrointestinal cramps, muscle aches and pains and extreme depression.

Amphetamine Treatment

Treatment and prevention of non-narcotic drug abuse is tentative and fragmentary in nature. Treatment of amphetamine abusers is considered especially difficult because of the lack of motivation on the part of the user to seek help. The sense of

euphoria and power conferred by the drug may strongly influence continued use. Many users do not consider amphetamine abuse an illness in need of treatment and seek aid only when forced by serious complications such as hepatitis. When the complications have been successfully treated, amphetamine use generally resumes.

Withdrawal from amphetamines is best achieved in hospital under close supervision. Any amphetamine induced psychotic symptoms present will likely disappear within a few days or weeks. As mentioned earlier, some confusion, memory loss or delusions may persist for 6 to 12 months. There is no conclusive evidence that excessive use of amphetamines causes permanent brain damage.

The strong positive reinforcement associated with intravenous use (the rush) is extremely difficult to overcome by treatment. The symptoms for withdrawal (for example - depression, fatigue and apathy) may cause the user to relapse into amphetamine use in order to obtain relief. The user's rapid physical and apparent behavioural recovery may lead to untimely termination of treatment with a resultant return to amphetamine use.

To ease withdrawal from amphetamines, emphasis should be placed on helping the user return to normal, healthy eating and sleeping habits. Treatment should be geared to the individual user with particular attention being paid to pre-existing personal and social problems. Intensive therapy may be indicated.

Participation in self-treatment groups, changes in environment and life-style in the form of residential half-way houses and/or therapeutic communities may help the amphetamine user maintain abstinence.

Whatever kind of treatment is used, it must be maintained over a long period of time to be effective.

Amphetamines and Society

Amphetamine abuse is present in all levels of society. Even though intravenous abuse is attractive to individuals in their teens and early twenties, oral abuse of amphetamines and amphetamine-like drugs is very prevalent among adults. Some heavy amphetamine abusers show a degree of psychic instability prior to drug abuse. Stimulants may be used to handle emotional inadequacies and problems of living.

The oral amphetamine abuser may have been introduced to the drug through a doctor's prescription for treatment of obesity, mild depression or fatigue.

The obese, depressed or tired person may find the original complaint intensified by the depressive aftereffects of amphetamines and thus continue a pattern of use leading to abuse. On the other hand, the individual may continue to take the drug specifically for its euphoric effects.

Initially non-medical drug users may take amphetamines orally or intravenously to counteract the effects of other drugs. The actual injection of amphetamines is strongly associated with the drug-using subculture.

There appear to be two types of intravenous amphetamine users: the individual already using opiates who turns to "speed" when the prior drug is unavailable, or the individual who seeks the effects produced by speed alone.

The "speed freak" is generally unpopular within the drug subculture because of the violence and aggression associated with intravenous amphetamine abuse. Moreover, unlike some hallucinogen (LSD etc.) users, amphetamine users do not appear to be concerned with gaining new insight or a deeper understanding of themselves.

Use of amphetamines has been associated with lack of social adjustment, mental instability, problems with family or the law prior to drug use, feelings of inadequacy and lack of self-esteem. For many, amphetamines create a transient sense of power, self-confidence and well-being. Some even seem to enjoy the notoriety associated with the use of speed.

Amphetamines and the Law

In the past, some physicians extensively prescribed amphetamines to treat conditions ranging from obesity to rheumatism. However, it has since been revealed that amphetamines are totally, or partially, ineffective for most of the conditions for which they were prescribed. Paradoxically, as the medical uses for amphetamines decreased, their legal production increased. In Canada, from 1966 through to 1972, nearly twice as many amphetamines were manufactured, for domestic medical use, as were legally sold.

The Federal Government, as a result of, "the overprescribing of these drugs by some medical practitioners...and a concern

about the public health implications of amphetamine abuse" has drastically reduced the legal availability of amphetamines.

Amended regulations covering amphetamines, (introduced January 1, 1973) restrict their use to the treatment of narcolepsy, hyperkinesis (hyperactivity), a form of mental retardation associated with brain dysfunction, epilepsy, Parkinson's disease and low blood pressure states associated with anesthesia. It has been estimated that a 90% reduction in the consumption of legally prescribed amphetamines took place in the first nine months following introduction of these restrictions.

Under the Food and Drugs Act (1972) it is illegal for anyone to traffic in, or possess amphetamines for the purpose of trafficking. Trafficking means to manufacture, sell, export from or import into Canada, transport or deliver amphetamines without legal authorization. An individual convicted of trafficking or possession for trafficking is liable:

(a) upon summary conviction, to imprisonment for 8 months; or
(b) upon conviction or indictment, to imprisonment for 10 years.

Simple possession of amphetamines is not illegal in Canada. Prohibition or restriction of legally produced amphetamines has done little to prevent illicit amphetamine abuse because of black market production. Rigid or punitive laws have not eliminated the problem. Anti-speed propaganda may, in fact, have informed and enticed young drug users to experiment.

The prevention of amphetamine abuse may lie in presenting life alternatives that are better and more lasting than the effects obtained by ingesting drugs. On a more generalized scale, efforts to improve the social, cultural, and economic factors that lead to drug abuse are also required.

BARBITURATES: Introduction

The barbiturates are a group of synthetic drugs derived from barbituric acid. They were first produced for medical use in 1903. All barbiturates act as central nervous system depressants and can produce degrees of effect ranging from mild sedation to coma. They are commonly used medically in the treatment of insomnia, nervous tension, anxiety and epilepsy.

Barbiturates are usually classified according to the length of time that their effects last. First, ultrashort-acting barbiturates like hexobarbital (Epival®) are used to prepare patients for general anesthesia. Second, the short and intermediate-acting barbitu-

rates such as pentobarbital (Nembutal®), secobarbital (Seconal®), amobarbital (Amytal®), and butabarbital (Butisol®) are often prescribed as sleeping pills and sedatives. Third, the long-acting barbiturates - phenobarbital (Luminal®) for example - can also be used as sedatives or sleeping pills. These long-acting drugs also prove effective in the treatment of convulsions associated with epilepsy, drug withdrawal states, and overdoses of such stimulants as strychnine or cocaine. In all, over 2,000 different types of barbiturates have been synthesized but less than a dozen are presently used. The long and ultra short-acting types of barbiturates appear to be misused the least; the short and intermediate-acting drugs are more often abused.

The trend in the quantities of barbiturates imported into Canada during the first half of the 1970's shows a decline: 31,309.2 kg in 1970; 21,625.1 kg in 1974. Parallel decreases in the number of barbiturate prescriptions written since 1970 and the number of barbiturate-related deaths since then have also been recorded. In 1970, for example, one third (33%) of all the hypnotics and sedatives prescribed in Ontario were barbiturate drugs. By 1974, the figure declined to 22%.

Those Canadians who consume most of the barbiturate prescriptions are most likely to be female, 50 years of age or older, in hospital, or individuals suffering emotional upset, an accident or an illness. Children only rarely receive prescriptions for barbiturate drugs.

Nearly 50% of the barbiturates manufactured legally in the United States are believed to be diverted to the black market. A similar diversion occurs in Canada although reliable estimates of its extent remain unknown. Slang names for black market barbiturates include "reds", "downers", or "barbs".

Barbiturates come as powders, syrups, drops, suppositories, capsules, injections, tablets, and elixirs (sweetened, alcoholic, or medicinal solutions). Although usually taken by mouth, barbiturates may also be injected or taken rectally. The oral or intravenous methods are generally used for the administration of large doses.

Physical Effects of Barbiturates

Generally speaking, barbiturates cause depression of central nervous system activity. This effect varies, according to dose, from mild sedation to unconsciousness or anesthesia. A small

dose of a barbiturate usually produces calmness, relief of anxiety or tension and the relaxation of muscles. Still, the short-term effects of low doses of barbiturates can be unpredictable. For example, a therapeutic dose which may be insufficient to produce sleep in some people may, in others, cause excitement, delirium and hallucinations. Depending on the individual and the situation, low doses of the drug may stimulate the central nervous system to produce animated behaviour and reduced inhibitions. Afterwards, however, signs of drowsiness or sleep usually appear.

Barbiturates in moderate doses slow down breathing and reflexes, decrease blood pressure and heart rate, and reduce physical co-ordination. Under the drug's influence, a person's ability to carry out complicated mental tasks diminishes and their emotional control weakens. Barbiturate-induced sleep is also said to be less beneficial than natural sleep patterns.

Even at normal recommended dosages, adverse side effects may occur in some individuals. Complaints following intravenous use can include coughing, hiccuping, and throat and chest-wall spasms. Elderly patients on barbiturates may exhibit excitement, confusion or depression, symptoms that disappear when use is terminated. Skin rash, fever, nausea, tiredness, dizziness, diarrhea, excitement, euphoria, restlessness, or prolonged depression may also occur with average doses.

Barbiturates taken in high doses cause intoxication very similar to that produced by alcohol. At one extreme, the high-dose user may become happy, pleasant, talkative, or "mellow" (euphoria is usually only produced by the short-to-intermediate-acting barbiturates such as secobarbital, pentobarbital or amobarbital). At the other extreme, the user may become hostile, suspicious, quarrelsome, aggressive, and violent. The individual may exhibit poor memory, difficulty in thinking, faulty judgement and loss of inhibition and emotional control. Emotional withdrawal and depression, self-pity and suicidal tendencies have also been noted.

Individuals who inject large doses of barbiturates intravenously experience a "rush" effect immediately after injection which has been described as an intensely pleasurable, warm and drowsy feeling. For such users, this "rush" is the major sought-after effect.

The subjective or individual response to a high dose of barbiturate depends on the psychological makeup of the individual, the

conditions under which the drug is taken, the expectations of the user, and the pharmacological properties of the drug. For example, if the user expects to sleep in a sleep inducing environment, he will probably sleep; if he expects to have a good time in a stimulating environment, he will probably experience euphoria and stimulation.

The physical effects of high doses of barbiturates can include slurred speech, staggering, reduced co-ordination, slower reflex actions, and, as with moderate doses of barbiturates, slower breathing and heart rates, and decreased blood pressure. Larger dosages induce drowsiness and sleep.

Hazards of Barbiturate Use

Overdose of barbiturates can result in poisoning or death. Statistics compiled by Health and Welfare Canada reveal that the number of barbiturate poisoning cases in the country rose from 1,449 in 1969 to 1,667 in 1973. In 1969, a total of 343 barbiturate-related deaths were recorded in Canada. By 1974, the figure declined to 246 deaths. More cases of accidental death in children, particularly among youngsters two and three years old, have been attributed to barbiturates than to any other drugs.

Users can accidentally overdose themselves when, confused by the drug's effects, they forget how many doses they have already taken. For the non-tolerant, new user a lethal dosage may be no larger than three times the normal dose taken at one time, or eight hundred milligrams taken in one day. Tolerant abusers may become overdosed if they ingest a few hundred milligrams more than their usual intake.

The more serious symptoms of overdose include a weak and rapid pulse, coma, and a serious drop in blood pressure. Death, in turn, may result from severe respiratory depression, reduced gastrointestinal activity, or a fatal lowering of body temperature (hypothermia).

Using barbiturates to boost the effects of alcohol, heroin, or other depressants can result in overdose. Taken separately, these drugs might not be life-threatening. In combination, their mutually reinforcing effects can reach fatal potency. Alcohol, for example, enhances the absorption of barbiturates and produces an additional sedative effect. In Canada in 1971, of 482 drug-

overdose deaths involving barbiturates, 144 cases also involved alcohol.

Some people who want to commit suicide do so by taking a death-inducing quantity of barbiturate. In 1971, for example, barbiturates were involved in 217 of 2,559 deaths attributed to suicide or intentional self-inflicted injury.

The personal hazards associated with chronic intravenous barbiturate abuse derive primarily from the use of dirty or infected needles. These include serum hepatitis, syphilis, malaria, pneumonia, tetanus, infected heart valves and infected abscesses. Abscesses or damage to hands and feet can occur if barbiturates are injected intramuscularly or into an artery instead of a vein.

Secondary hazards of barbiturate abuse include malnutrition and increased use of related drugs such as alcohol and tranquilizers. Various researchers add that the socially menacing aspects of the drugs derive mainly from their effects on the individual's motor functioning and emotional stability. Barbiturate abusers are more likely than non-users to be involved in automobile and industrial accidents and interpersonal squabbles, violence and assaults.

Barbiturate use by mothers during pregnancy can pose risks for the unborn. Expectant mothers sometimes take barbiturates (briefly or in a chronic pattern) as medication for pregnancy-related disorders. The barbiturates that the mother ingests cross the placenta and enter the fetus. Because the fetus' partially developed kidneys are unable to eliminate them, the fetus retains the drugs in a higher concentration than in the mother. Within days of its birth (the seventh day, on average) the infant can experience withdrawal. Observers have recorded withdrawal symptoms in infants whose mothers used barbiturates in large doses during or throughout the last trimester of pregnancy. At birth, however, these children were found to be of normal weight.

Other recent evidence indicates that infants born of mothers addicted to barbiturates may, in addition to showing signs of withdrawal, develop congenital malformations at a higher rate than other children.

Presently, more research into the effects of maternal barbiturate use on the young during and after pregnancy needs to be undertaken.

Tolerance, Dependence and Withdrawal

Tolerance to barbiturates (experienced by the user as the need for larger and larger doses of the drug to achieve the desired effect) can develop within days or weeks of daily use. The degree of tolerance acquired and the rate of acquisition varies with dose size, the frequency of drug taking and the characteristics of the individual user. Tolerance, moreover, develops most rapidly to the short-acting barbiturates.

Cross-tolerance also occurs. This effect involves resistance to one depressant drug (barbiturates, for example) that generalizes to other depressant drugs (alcohol, for exampie).

Tolerance to the toxic (poisonous) properties of barbiturates does not develop however. Therefore, as the user increases the dose to get the desired effect, the safety margin between an intoxicating dose and a fatal dose narrows. A dose of barbiturates sufficient to kill a novice user will alsc likely kill a chronic user.

The lethal dose of a barbiturate varies with many factors and cannot be stated with certainty. Severe poisoning, though, will likely occur with the administration of three to ten times the normal sleep-inducing dose. Quantitites fifteen to twenty times the normal sleep-inducing dose may produce death in minutes. The short-acting barbiturates are more potent, and therefore more toxic (poisonous) than long-acting barbiturates. Both psychological and physical dependence develop with chronic use. Abrupt withdrawal of barbiturates from a physically dependent individual can be life-threatening. In extreme cases, barbiturate withdrawal can be more life threatening and painful than withdrawal from opiate narcotics.

Severity of withdrawal symptoms depends upon the extent of barbiturate use and the user's characteristics. In mild form, withdrawal symptoms can include irritability, restlessness, anxiety, and sleep disturbances.

Chronic users usually show improvement after completing the initial sobering-up phase of withdrawal. However, increasing anxiety, headache, twitching, nervousness, tremor, and weakness can then appear. These symptoms become fairly intense about 16 hours following withdrawal and are severe after 24 hours. Nausea, vomiting, fever, rapid weight loss and increases in blood pressure, pulse, and respiration rates have also been observed. Between the thirtieth and forty-eighth hours of

withdrawal, major convulsions of the Grand Mal (epileptic) type may occur. Following the convulsions, a form of psychosis resembling alcoholic delirium tremens may develop in which the individual experiences anxiety, agitation, insomnia, confusion, delusions, auditory and visual hallucinations, and disorientation as to time and place. This psychosis may last for days or even months although recovery usually occurs within a week or two.

Most detoxified individuals recover completely. Physically rundown patients or those undergoing unsupervised barbiturate withdrawal might, however, die.

Barbiturate Treatment

Medical treatment of barbiturate withdrawal usually involves substituting a long-acting barbiturate for the short or intermediate-acting barbiturates being abused. The dosage is then reduced daily until withdrawal is completed. Physically addicted persons should be withdrawn from barbiturates in a hospital setting with skillful medical aid on hand. Following withdrawal, particular attention should be paid to the patient's personal and social problems. Psychological support in the form of individual or group psychotherapy or self-treatment groups may be of value. Nonaddicting drugs might also be used. Individuals with suicidal tendencies or with a dependency of more than a year's duration may benefit from long-term residential care.

Patients should be discouraged from self-medicating with alcohol or other depressant drugs to relieve anxiety or emotional depression. Alternative treatments include hypnosis, meditation, and muscle relaxation exercises.

Attempts to treat barbiturate abusers can sometimes be frustrated by their unwillingness to stop taking the drugs. These individuals may not consider barbiturate abuse a problem requiring treatment. They often have legitimate prescriptions and feel that their use is sanctioned by authority. Many believe that their emotional stability depends on their continuing use of barbiturates.

Barbiturates and Society

Barbiturate abuse occurs in all levels of society. Emotionally maladjusted persons, however, appear most likely to develop a barbiturate dependence. These individuals may use the drug to

reduce feelings of anxiety, guilt, inadequacy, tension, depression, or aggression, or to relieve symptoms of specific psychiatric problems. Those individuals with a history of dependence upon other substances (alcohol, for example) are also prone to barbiturate dependency.

The patterns of barbiturate abuse vary. An individual might start taking barbiturates through a doctor's prescription for the treatment of tension and/or insomnia. Psychological dependence on the drug may gradually develop. The user might then increase the dosage or use the drug at times other than those prescribed. Thus, a few capsules may be taken in the morning to ease the coming tensions of the day. A pattern of chronic barbiturate intoxication might be established. The individual may then visit several physicians and complain of sleeplessness or nervousness while really intending to get new prescriptions or refills. This type of barbiturate abuser would likely be an adult of middle or upper socio-economic status who has no contact with youthful drug subcultures.

Surveys conducted by the Commission of Inquiry Into the Non-Medical Use of Drugs (LeDain Commission) show that in Canada, one adult in twenty used sedatives, tranquilizers, or sleeping pills more than once a week (whether for medical or non-medical purposes) in 1970.

A 1977 study of adults' consumption of sleeping pills in several Ontario communities found that 9% of those surveyed said they consumed sleeping pills at some point during the year previous to the study. Of these users, 21% reported daily or near-daily consumption. Users were also more likely to be female and from middle and high socio-economic groups.

Teenagers and young adults sometimes use barbiturates on occasion as others use alcohol - to get "high". Intoxication usually occurs once or twice a week with a supply of barbiturates obtained from the black market, the family medicine cabinet, or by prescription.

Several recent studies outline the patterns of barbiturate use among young people at various locations in Canada. In Vancouver, surveys of secondary school students conducted in 1970, 1974 and 1978 found that non-prescription barbiturate use declined during the early part of the decade then stabilized between 1974 and 1978. In 1970, 6% of the students reported having used the drugs between one and five times; in 1974, 3% responded similarly. According to the 1978 survey, 3.8% of the

students used non-prescription barbiturates or tranquilizers between one and six times during the six months preceding the survey.

A similar study carried out in 1977 with Ontario students in grades 7 to 13 found that 6% of those sampled reported using non-prescription barbiturates at least once during the twelve months preceding the survey.

Other research, meanwhile, reports the percentage of students acknowledging the use of barbiturates or sleeping pills at least once during the six months preceding the survey. A summary of these findings shows that in rural Alberta, in 1974, 5% of students in grades 7 to 12 indicated use while in 1975, 2% of students in grades 7 to 12 indicated use, a decrease of 3%.

A number of trends in the use of barbiturates by Canadians emerge from the current information. Illicit barbiturate use among teenagers appeared to increase slightly between 1970 and 1975 then remain fairly constant up to the present. Over recent years, fewer barbiturate prescriptions were being written and more females than males received barbiturate prescriptions. Females generally report higher barbiturate useage - both illicit and licit - than do males; and between 1969 and 1974, more females than males died from barbiturate-related causes.

The chronic, barbiturate-injecting user is likely to be a young adult heavily involved in a drug-using subculture. He or she may have changed from multiple pill-popping and occasional heroin use to the intravenous administration of black market barbiturates. Such "barb freaks" generally appear unkept, malnourished and listless.

Chronic, high-dose users may exhibit suicidal tendencies and other unstable or violent behaviours. They tend to be accident prone, impulsive, to have poor judgement, and limited awareness of their condition. Physical effects such as hypersensitivity, nausea, decreased urine formation and ultimately death, can also occur. Barbiturate addicts are also at risk for possible chromosomal changes.

Drug users sometimes take barbiturates in combination with other substances. Opiate addicts, for example, often use barbiturates to boost the effects of weak heroin. Users might also rely on barbiturates to suppress the anxiety generated during an LSD trip or a "flashback", or to ease the symptoms of alcohol or heroin withdrawal, or to terminate the "speed" or methamphe-

tamine run and induce sleep. Some individuals enhance the effects of an amphetamine or alcohol by combining them with a barbiturate.

Barbiturates and the Law

Barbiturates are classified as controlled drugs under Section G of the Food and Drugs Act (1972). The Act makes it illegal for anyone to traffic in or possess barbiturates for the purpose of trafficking. Trafficking means to manufacture, sell, import, transport, or deliver barbiturates without legal authorization. Trafficking or possession for trafficking can lead to imprisonment for up to 18 months on summary conviction, or up to 10 years on indictment.

A total of 9,926 individual doses (or units) of barbiturates were seized in Canada in 1970. By 1974, the figure increased to 11,326 doses. The number of convictions from across Canada for barbiturate-related offenses decreased from 32 in 1968 to 27 in 1975.

Various suggestions have been advanced for controlling barbiturate abuse. These include:

- physicians should question the use of barbiturates and avoid their application in the long-term treatment of patients. Greater caution should be used in ordering barbiturate prescriptions or repeats over the telephone. Similarly, pharmacists should be increasingly on the alert for falsified telephone prescriptions or repeat requests.
- increased federal regulations for the distribution and prescription of barbiturates would also appear warranted. As large quantities of legitimately manufactured barbiturates are diverted to black market sources, manufacturers might add a small amount of an identifiable inert, nonallergenic substance to their product. Black market, repackaged barbiturates could then be traced to their origins.
- all persons concerned with handling, prescribing, and dispensing barbiturates should improve their security arrangements, since robberies of drug warehouses, physicians' offices and pharmacies also contribute to the availability of black market barbiturates.
- production quotas on barbiturates consistent with medical needs should be established.
- the most abused barbiturates (that is, those of short or intermediate action) might be replaced by more reliable, less

depressant, and less dependency-prone medications.
- medical-school curricula should be revised to include additional courses in drug abuse.
- driving when intoxicated by barbiturates is as hazardous as driving when drunk on alcohol. Thus, tests for the drug's presence should be available as required.
- physicians should carefully consider a patient's history of alcohol use prior to prescribing barbiturates, as a significant proportion of alcoholics abuse barbiturates.

TRANQUILLIZERS AND SEDATIVES

Tranquilizers and sedatives include a wide variety of drugs with extensive medical uses. Tranquilizers are commonly separated into two main classes: "major" and "minor". Although widely held, these classifications can be misleading since they imply differences in strength while, in fact, they refer only to differences in chemical structure. Major tranquilizers or, more accurately, the neuroleptics, are often used in the treatment of severe psychiatric disorders. Minor tranquilizers are commonly prescribed for a variety of complaints and milder disorders involving anxiety, tension, and pain.

Sedatives refer to a variety of drugs similar to the minor tranquilizers in their uses, effects, and potential for abuse. The minor tranquilizers and sedatives fall under the overall heading of psychotropic drugs or "mood-modifying" drugs, because their action on the chemistry of the body causes a change in a person's mood and behaviour.

The mood-modifying drugs also include such over-the-counter medications as the antihistamines and decongestants. This follows from the ability of these medications to cause drowsiness and, at high doses, their potential for abuse.

Along with alcohol and barbiturates, the minor tranquilizers and sedatives are more narrowly classed as "sedative-hypnotics" to indicate their depressing or slowing effect on the central nervous system. In street language, the sedative-hypnotic type drugs have the name "downers" while the tranquilizers are known as "tranks".

Sedatives have a much longer history of medical and non-medical use than do the minor tranquilizers. The well-known "Mickey Finn" of the 19th Century, given to unsuspecting sailors to knock them out so they could be "shanghaied", was

actually a concoction of alcohol and the sedative chloral hydrate.

The minor tranquilizers were a more recent chemical discovery. Meprobamate (Miltown®), the first of these compounds to be developed, came onto the market during the mid-1950's. Meprobamate was said to have the calming properties of the neuroleptics without the dependency-producing nature of the barbiturate-type sedatives. During the 1960's, the benzodiazapine group of tranquilizers such as chlordiazepoxide (Librium®) and diazepam (Valium®) replaced the earlier minor tranquilizers and, today, are the most widely prescribed of all medications. Chlordiazepoxide and diazepam feature a wider margin of safety against death by overdose than meprobamate and the non-barbiturate sedatives such as chloral hydrate, glutethimide and methaqualone.

Major tranquilizers include such drugs as haloperidol (Haldol®), and phenothiazine compounds (Thorazine®, Stelazine®). These neuroleptics have proven helpful in the treatment of certain kinds of mental illness such as schizophrenia, for example. They usually exert a calming effect on patients who feel restless, irritable, or aggressive.

The phenothiazine compounds might also have harmful effects in some cases. Recent evidence indicates that long-term use of drugs from this group (Stelazine®, for example) can lead to "tardive dyskinesia", a brain disorder which may result in irreversible damage.

Unlike the minor tranquilizers and sedatives, the major tranquilizers do not produce euphoria or other pleasant side effects. Consequently, people only rarely use them without medical supervision. For this reason, they will not be discussed further in this pamphlet.

Minor tranquilizers include such drugs as meprobamate (Miltown®), chlordiazepoxide (Librium®) and diazepam (Valium®). The minor tranquilizers were originally intended to relieve patients of the anxiety, tension, and insomnia (sleeplessness) caused by emotional disorders. Today, however, these tranquilizers are prescribed over 70% of the time for psychosomatic complaints, that is, for the relief of emotional stress accompanying a physical ailment. Examples include: muscular tension, high blood pressure, lower back pain, premenstrual discomfort, and stomach and heart ailments.

Patients undergoing withdrawal from alcohol or barbiturate dependence or those suffering an acute reaction to an halluci-

nogenic drug such as LSD sometimes receive prescriptions for tranquilizers. These drugs can reduce the severity of symptoms in such cases.

Sedatives include such drugs as chloral hydrate (Noctec®), glutethimide (Doriden®), methaqualone (Mandrax®, Quaalude®), and fluorazepam (Dalmane®).

As the name implies, sedatives are generally used to produce a calmed mental state or to overcome insomnia and induce sleep. Like the tranquilizers, sedatives are available only on a doctor's prescription. Some of these drugs, notably methaqualone, are obtained illegally and used for their pleasurable effects.

Over-the-counter preparations, sold for their sedative properties, include: Nytol®, Sleep-eze®, and L-Tryptophan® - a "natural" sedative. The effectiveness of many of the over-the-counter sedatives and sleeping pills has been questioned. Some, in addition, have serious side effects.

Other readily available preparations can cause drowsiness as a significant side effect. These are antihistamine-containing products such as Actifed® (for allergies), Contact® (for colds), Gravol® (for motion sickness) and nasal decongestants. Some of these products (Gravol® for example) are sometimes taken nonmedically in large doses to get "high".

Tranquilizers and sedatives usually come in the form of tablets, suppositories, or capsules but are sometimes found in liquids such as elixirs (a sweetened, alcoholic, medicinal solution), syrups, or injectable solutions.

Physical Effects of Tranquilizers and Sedatives

The effects of the minor tranquilizers and sedatives vary greatly among different people. Many factors, in addition to the drug itself, influence the way that an individual user might feel. These factors can include what the doctor believes about the drug; what the user believes about the drug; how much of the drug is taken; where the drug is taken; how much anxiety the user is experiencing and the type of personality in question.

In the short-term, a person taking prescribed doses would usually experience some degree of relaxation, a sense of well-being, occasional loss of inhibitions, reduced tension and anxiety and other effects similar to social use of alcohol. Individual responses vary, however. For some people, minor tranquilizers

in prescribed doses can produce drowsiness, or a feeling of isolation from their surroundings, or even an increase in anxiety. With larger doses, the degree of drowsiness, the loss of muscular coordination, and the general slowing down of bodily functions increase.

Excessive use of minor tranquilizers and sedatives can produce drowsiness, confusion, memory impairment, personality changes, rage reactions, and other symptoms resembling those of drunkenness. Some of these drugs may have serious side effects such as: skin rashes, nausea, reduced sex drive, menstrual irregularities, abnormal blood conditions, and increased sensitivity to alcohol's impairing effects.

Tolerance, Dependence and Withdrawal

Clinical evidence shows that, in the long-term, tolerance, dependence, and withdrawal can occur with regular use of most minor tranquilizers and sedatives, even at prescribed doses. Tolerance means that more of the drug must be taken in order to achieve the sought after feeling of well-being.

Physically dependent users sometimes turn to other similar drugs to obtain the desired effect. Habitual use, however, can lead to development of tolerance for drugs of the same type other than the one regularly taken. This effect is called cross-tolerance.

Alcoholics, for example, often regard and use minor tranquilizers and sedatives as a substitute for their drug of choice. Thus, many doctors oppose the long-term use of minor tranquilizers by people with a past history of drug abuse and dependence.

Heavy use of minor tranquilizers and sedatives can also lead to psychological dependence (a strong need to repeatedly experience the drug's effect even in the absence of physical addiction).

Someone who stops taking the drug after continuous daily use for several weeks might undergo withdrawal. He or she will likely feel some degree of discomfort and could exhibit mild tremors, anxiety, sweating, or sleeplessness.

Withdrawal after several months of use may be more severe, resembling withdrawal from alcohol or barbiturate dependence. Cramps, vomiting, convulsions, and depression usually occur. In rare cases, death has resulted following sudden cessation after long-term and excessive use.

Hazards of Tranquilizer and Sedative Use

When used as directed, under wise medical supervision, minor tranquilizers and sedatives generally prove safe and effective. But, if taken unwittingly or in inappropriate doses, or at the wrong time, or in the wrong place, they can cause serious harm and even death.

Laboratory studies have shown that minor tranquilizers and sedatives can impair many of the abilities needed for the safe operation of a motor vehicle or machinery. Avoid driving or operating machinery while taking these drugs. To combine the minor tranquilizers with alcohol or other sedative-containing drugs such as the antihistamines, then to drive a car, greatly increases the risk of accidents.

The use of some minor tranquilizers and sedatives by women during pregnancy and lactation (breast-feeding) can result in abnormalities in the fetus and impaired functioning of the newborn. Current research indicates that the use of such tranquilizers as Thorazine®, Miltown®, and Librium® by a prospective mother can lead to congenital abnormalities, heart disease, jaundice, partial deafness, and skeletal defects in the infant, particularly if these drugs are taken during the first three months of pregnancy.

Quantities of the drugs that the mother takes are secreted in her milk which the infant might then ingest through breast-feeding. Newborns exposed in this manner to such tranquilizers as Miltown® and Valium®, for example, have exhibited sluggishness and other toxic reactions.

A woman of child-bearing age is strongly advised to take every precaution against pregnancy while on this type of medication. Because their use is rarely a matter of urgency, a woman should avoid them completely during pregnancy and lactation unless otherwise advised by her doctor.

The minor tranquilizers and sedatives vary considerably in their lethal toxicity (amount that causes death). Of all the minor tranquilizers, Valium® is most often involved in accidental poisonings in Canada while, among the sedatives, Mandrax® has that distinction. Fortunately, few such poisonings prove fatal.

Women outnumber men in self-poisoning cases. About half are under 30 and depression is the common cause. Strikingly, about 25% of all accidental poisonings involve children under

five years of age.

Drugs used in combination - minor tranquilizers or sedatives mixed with alcohol, for example - may interact to produce more intense and longer-lasting effects. Many unintentional poisonings, and sometimes even deaths have resulted.

Tranquilizer and Sedative Treatment

Minor tranquilizers or sedatives should be taken only on the advice of a doctor so that the type of drug used and the prescribed dosage can be adjusted to suit the individual's needs. Despite this caution and the legal requirement of a prescription, however, many people endanger their health by using these drugs without medical supervision or in amounts greater than prescribed.

Many steps have been taken to promote more effective and responsible use of minor tranquilizers and sedatives in medical settings.

Vigorous education directed at staff and patients in certain hospitals has resulted in a dramatic decline in the use of minor tranquilizers and sedatives. Regular review of doctors' prescribing procedures through the use of drug lists, standards, and committees has also reduced their use. Also, the presence of counselling and other support services has reduced pressure on doctors and brought about a reduction in the number of drug prescriptions used.

For the individual, responsible use stems from being better informed about drugs. The following simple guidelines apply to tranquilizers and sedatives and to the use of all medications generally.

What to do:

- ask your doctor why he prescribed the drug, what it is, and what side effects (major or minor) to expect.
- question him, or the pharmacist, if instructions are not clear.
- follow instructions carefully regarding the amount and time of dosage of the drug.
- inform your doctor fully of any other medications you're using before accepting the new prescription.
- contact your doctor immediately if your condition does not improve or if any unusual side effects occur.
- ensure that drug containers are clearly labelled and stored in a safe place out of the reach of children.

- check your medicine cabinet periodically and dispose of old or unneeded drugs.
- seek solutions to the problems that made medication necessary. Talk to your doctor, your minister, or anyone else who may be able to give advice and offer reassurance.
- examine your lifestyle. Consider nonchemical alternatives such as relaxation training or physical exercise as ways to cope with the lesser of life's stresses.
- consider also changing the circumstances in which you live or work. Such adjustments can sometimes be the most effective way to reach the solution to a problem.

What not to do:

- don't take a prescription that was not prescribed for you, and never give, trade or share a prescription with someone else.
- don't drive or operate machinery while taking minor tranquilizers or sedatives unless your doctor advises that such an activity would not be hazardous.
- don't use alcohol at the same time as these drugs without asking your doctor. The combination could be dangerous.
- don't use the minor tranquilizers during pregnancy or lactation (breast-feeding) unless your doctor determines their use is a matter of urgency. Stop taking them if you suspect that you are pregnant and inform your doctor.

Authorities agree that drugs such as the minor tranquilizers and sedatives may provide a form of relief from human problems but they cannot provide solutions. All drugs, including prescribed and over-the-counter drugs, have a potential for abuse. Any drug can create problems if used indiscriminately.

Tranquilizers and Sedatives and Society

In contrast to reports prior to 1975, recent surveys in North America show that the overall amount of minor tranquilizers and sedatives consumed has not increased significantly. Indeed, consumption appears to be declining.

More specifically, statistics gathered in Canadian surveys between 1971 and 1977 revealed that 13% used a tranquilizer (major or minor) during the year previous to the survey. Of those taking tranquilizers, 38% used them daily. About half of all prescriptions for mood-modifying drugs continue to be for minor tranquilizers and sedatives. Diazepam (usually Valium®), con-

tinues to be the "best-selling" drug in Canada.

It has been estimated that one in ten persons using tranquilizers does so without a prescription. Surveys have revealed striking variations in use patterns when age, sex, and marital status were considered separately. Among the findings it was discovered that a Canadian over 30 years old had a 50% greater chance of using a tranquilizer than the general adult population. Someone over 60 was twice as likely to do so.

The surveys further revealed that a woman was twice as likely to obtain a prescription than a man; yet a man was more likely to consume greater quantities of the drug on any given occasion.

Tranquilizer and sedative use occurs at significant levels among young Canadians. A 1977 survey of Ontario students found that about 6.8% of students in grades seven to twelve used tranquilizers (either with or without a prescription) at least once during the twelve months preceding the survey. A similar study with rural Alberta students from grades seven through twelve, which examined illicit drug use over the six months before the study, placed the figure at 6.3%. A survey of intoxicant use among Edmonton junior and high school students, conducted in 1979, similarly found that about 5% of those sampled reported using tranquilizers (either with or without a prescription) at least once during the six months previous to the study.

As teenagers become young adults, larger numbers of them take tranquilizers and sedatives. The surveys show that whereas about 10% of high school students have used a minor tranquilizer or a sedative, the figure more than doubles for estimates of users among college and university students.

Young people sometimes acquire these drugs without prescriptions, that is, illegally. Often a parent, the mother in most cases, is the source of the drugs.

Some young people (primarily males between 18 and 25 years of age) abuse minor tranquilizers and sedatives by taking them for "recreational" purposes. Adults who visit a number of doctors in the hope of obtaining several prescriptions also abuse these drugs. Alcoholics and other drug-dependent individuals sometimes abuse the tranquilizers and sedatives by taking them as alternative intoxicating drugs.

Much debate surrounds the issue of general misuse or overuse of these drugs by the public. Some authorities see the widespread consumption of these drugs, by middle-aged

women and the elderly in particular, as a sign of inappropriate prescribing to remedy social problems such as isolation rather than medical problems. Also, the usefulness of the tranquilizers and sedatives in treating many of the psychosomatic ailments for which they are most commonly prescribed has not been demonstrated clearly.

This issue involves many factors including the pressure on doctors for their time and skills and the need to up-date and expand doctors' education in this area. Other elements at play include the public's demand for a "magical" chemical cure, the aggressive advertising and sales techniques of the drug industry and the stressful nature of society as a whole.

Tranquilizers and Sedatives and the Law

Most tranquilizers and sedatives are classed as drugs (Prescription Drugs) under the Food and Drugs Act. They may be sold to the public only on medical prescription. Forging a prescription is an offence, as is trafficking (manufacturing, importing into or exporting from Canada, transporting, selling or giving) or possession for the purpose of trafficking. The penalty on summary conviction for a first offence is a fine of up to five hundred dollars or imprisonment up to three months. For a subsequent offence, a fine of up to one thousand dollars and/or imprisonment up to six months may be imposed. Conviction on indictment can involve a fine of up to five thousand dollars and/or imprisonment up to three years.

Drugs sold over-the-counter come under the Proprietary and Patent Medicines Act. This legislation requires that manufacturers be licensed and it includes regulations governing the manufacture, packaging, labeling, advertising and sale of these products.

In Canada, driving while intoxicated by any drug is an offence subject to the same penalties as those imposed for drunken driving.

For further information or assistance, contact the nearest AADAC office. Please consult your telephone directory, or write:

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BOX 2900 MAIN POST OFFICE
EDMONTON, ALBERTA T5J 2G5

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